Claims

What is claimed is:

1. A closed circuit breather apparatus for an engine breather system comprising:

a cylinder head cover; and

a shut off valve provided beneath the cylinder head cover, the shut off valve including an aperture in communication with a ventilation inlet passage and a valve float restrained to move between a first position in which the aperture is open and a second position in which the aperture is closed.

2. A closed circuit breather apparatus according to claim 1, wherein the shut off valve includes a guide cage that restrains the valve float for movement between the first and second positions.

3. A closed circuit breather apparatus according to claim 2, wherein the guide cage is fixed to the underside of the cylinder head cover.

4. A closed circuit breather apparatus according to claim 1, wherein the valve float is a ball float and covers the aperture when the valve float is in the second position.

5. A closed circuit breather apparatus according claim 2, wherein the valve float is a ball float and covers the aperture when the valve float is in the second position.

6. A closed circuit breather apparatus according to claim 3, wherein the valve float is a ball float and covers the aperture when the valve float is in the second position.

7. A closed circuit breather apparatus according to claim 1, further including a pressure regulation valve in communication with the ventilation inlet passage.

8. A closed circuit breather apparatus according to claim 2, further including a pressure regulation valve in communication with the ventilation inlet passage.

9. A closed circuit breather apparatus according to claim 3, further including a pressure regulation valve in communication with the ventilation inlet passage.

10. A closed circuit breather apparatus according to claim 4, further including a pressure regulation valve in communication with the ventilation inlet passage.

11. A closed circuit breather apparatus according to claim 7, further including an outlet passage in communication with the pressure regulation valve, the outlet passage having a first portion provided beneath the cylinder head cover and a second portion extending through the cylinder head cover to an outlet outside the cylinder head cover.

12. A closed circuit breather apparatus according to claim 8, further including an outlet passage in communication with the pressure regulation valve, the outlet passage having a first portion provided beneath the cylinder head cover and a second portion extending through the cylinder head cover to an outlet outside the cylinder head cover.

13. A closed circuit breather apparatus according to claim 9, further including an outlet passage in communication with the pressure regulation valve, the outlet passage having a first portion provided beneath the cylinder head cover and a second portion extending through the cylinder head cover to an outlet outside the cylinder head cover.

14. A closed circuit breather apparatus according to claim 10, further including an outlet passage in communication with the pressure regulation valve, the outlet passage having a first portion provided beneath the cylinder head cover and a second portion extending through the cylinder head cover to an outlet outside the cylinder head cover.

15. A closed circuit breather apparatus for an engine breather system comprising:

a cylinder head cover adapted to define an engine valve chamber; and

a shut off valve provided within the engine valve chamber,

the shut off valve including an aperture in communication with a ventilation inlet passage and a valve float restrained to move between a first position in which the aperture is open and a second position in which the aperture is closed.

16. A closed circuit breather apparatus according to claim 15, wherein the shut off valve includes a guide cage that restrains the valve float for movement between the first and second positions.

17. A closed circuit breather apparatus according to claim 16, wherein the guide cage is fixed to the underside of the cylinder head cover.

18. A closed circuit breather apparatus according to claim 15, further including a pressure regulation valve in communication with the ventilation inlet passage.

19. A cylinder head cover arrangement for an internal combustion engine, comprising:

a cylinder head cover;

a ventilation inlet passage integral with said cylinder head cover; and

a breather shut off valve integral with said cylinder head cover and in communication with said ventilation inlet passage.

20. A cylinder head cover according to claim 19 further including:

a ventilation outlet passage integral with said cylinder head cover; and

a pressure regulation valve in communication with said ventilation inlet passage and said ventilation outlet passage.